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ABSTRACT

This study investigated whether or not recent educational reform efforts might be related to the level of academic skills of individuals entering teacher preparation programs. A sample of 1991 beginning teacher candidates (n=377) was compared with a sample of 1985 beginning candidates (n=358) entering the same large midwestern institution using Comprehensive Test of Basic Skills (CTBS) and American College Test (ACT) scores as criterion measures. No overall group mean differences were identified between the two groups' ACT scores, but means for two of the 1991 candidates' CTBS language skills scores were statistically lower. The study concludes that educational reform efforts do not appear to have improved the teaching profession's previously limited success in competing with other professions for high aptitude students. Findings suggest that teacher candidates' basic academic skills may have declined over this period of time. (Author/JDD)

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Are Selected Educational Reform Efforts Succeeding as Judged by a Comparison of the Academic Skills of Current and Past Teacher Candidates?

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Abstract

This study investigated whether or not recent educational reform efforts might be related to the level of academic skills of individuals entering teacher preparation. A sample of 1991 beginning teacher candidates (n = 377) were compared with a sample of 1985 beginning candidates (n = 358) entering the same large midwestern institution using Comprehensive Test of Basic Skills (CTBS) and American College Test (ACT) scores as criterion measures. No overall group mean differences were identified between the 1985 and 1991 candidates' ACT scores, but two of the 1991 candidates' language skills score means were statistically lower. To the extent that findings from this single institution may be generalized to other similar institutions, it was concluded that educational reform efforts, such as recruiting individuals with high ACT scores, during the past six years of ever increasing competition for talented high school graduates appear to not have improved the teaching profession's previously limited success in competing with other professions for high aptitude students. Furthermore, these findings suggest that teacher candidates' basic academic skills may have declined over this period of time.

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Are Selected Educational Reform Efforts Succeeding as Judged by a Comparison of the Academic Skills of Current and Past Teacher Candidates?

During the past several years a common belief has existed that there is a widespread need to improve education in the United States. The concerns about the poor quality of education have been fueled in part by reports critical of schools, declining college admission test scores, international comparisons of pupils revealing unfavorable performance of our pupils, an increasingly complex work world demanding skilled employees, and the belief that many teachers in our schools are incompetent. Educational reform efforts in response to these concerns about quality have focused upon pupil and teacher competency testing, a basic skills curriculum, attracting more competent individuals to the teaching field, and school accountability. Concomitant with these educational reform efforts, the business segment of our society has increasingly recognized the need to compete in a world economy which has led to cost reducing reorganizations, increased use of technology, and efforts to recruit more competent and skilled employees (James, 1991).

These business and educational accountability movements have increased competition for limited human resources. How well the educational profession competes with the business community and other professions for those talented individuals who will provide future leadership in our society is increasingly becoming a major factor in maintaining teacher quality. The existing research literature suggests that the education profession may be less effective in attracting and retaining talented candidates than are other professional fields. For example, Weaver (1983) theorized that an individual's marketability in the business world is the foremost influence upon his or her recruitment to and attrition from the teaching profession. He noted that talented individuals are more likely to be attracted to professions other than education initially and, if teachers, are more likely to be attracted away from teaching. He further hypothesized that the enhanced marketability of women and minorities, due to their broader career opportunities, will have an increasingly detrimental effect upon the educational profession's efforts to successfully compete for talented candidates.

Research pertaining to teacher recruitment and retention provides at least partial support for Weaver's views. Bloland and Shelby (1980) reported that higher socioeconomic class families tend to counsel their children away from teaching and, if these individuals do become teachers, they are more likely to leave the profession. Other researchers have found that the more capable high school graduates tend to be less attracted to teaching and, if they become teachers, are more likely to leave the profession than are their less capable cohorts (Chapman & Hutcheson, 1982; Schlechty & Vance, 1983). Two more recent longitudinal studies, however, somewhat temper these findings. A large national study indicated that teacher attrition has decreased in the past decade and that attrition has not decreased the

ability and qualifications of those teaching (Heyns, 1988). In the second study the researchers found that candidates persisting through teacher education earned higher university GPA's, possessed higher levels of basic academic skills, and reported more desirable attitudes and concerns about teaching at the commencement of their teacher preparation program than had their nonpersisting cohorts (Pigge and Marso, 1992).

The present study was conducted to determine whether or not recent educational reform efforts might be related to the level of the basic academic skills of individuals entering a large teacher preparation institution in the midwestern states. The major premise was that if it could be shown that the teacher candidate pool of the 1990's possesses higher, or even similar levels of basic academic skills as those of the 1980's, then it would appear that this and similar teacher preparation institutions are being successful in competing with businesses and other professions in recruiting talented individuals to the profession. More specifically, this study was designed to test the hypothesis that the basic academic skills of the teacher candidates of spring 1991 will not differ significantly ($\alpha = .05$) from those of the spring 1985 teacher candidates as measured by the Comprehensive Test of Basic Skills (CTBS) and by the America College Test (ACT).

Method

The subjects for this study consisted of 358 teacher candidates beginning their teacher preparation program spring of 1985 and of 377 teacher candidates beginning their teacher preparation program spring of 1991 at the same large midwestern teacher preparation institution. Each of the 1985 candidates had completed seven tests of the Comprehensive Test of Basic Skills (CTBS) during the orientation to their required first teacher education class. The 1991 candidates, six years later, completed the same CTBS tests under the same circumstances as did the 1985 sample; however, due to restricted available testing time, two or three of each of the seven CTBS tests were randomly assigned and administered to randomly formed groups of these prospective teachers. Additionally, the ACT scores available in the university's admissions files were collected for these two groups of candidates.

Statistical checks of candidate characteristics were made which suggest that the 1985 and 1991 candidates were comparable relative to such characteristics as father's occupation and educational attainment, geographical location and size of the students' graduating high schools, proportion being from families of educators, at what point in time they made their decision to become teachers, the extent of their prior "teaching like" experiences, and reasons checked for selecting teaching as a career. Some differences were noted between the two groups of prospective teachers, but these differences were judged to be largely the influence of continuing changes in societal demographics related to applicants of teacher education programs such as a somewhat larger proportion of elementary to secondary majors (55% in 1991 versus 41% in 1985), somewhat fewer males (25% in 1991 versus 41% in

1985), from somewhat smaller families (75% with 2 or fewer siblings in 1991 versus 54% in 1985), and fewer mothers with no more than a high school education (41% in 1991 versus 51% in 1985).

The exact nature of the K-12 educational preparation of the 1991 candidates as compared to the 1985 candidates was not be ascertained. The general changes brought about by educational reform in the region served by this university would seem, however, to reflect the trends similar to those across the nation. Namely, the 1991 candidates, in contrast to the 1985 candidates, experienced state initiated educational reform efforts such as increased academic units required for high school graduation and minimum competency testing required at three grade levels. Further, the 1991 candidates in contrast to their 1985 cohorts were likely aware of or experienced the more recent teacher education reform efforts such as the establishment of National Teacher Examination performance standards for teacher certification, the systematic recruitment of academically talented candidates by regional teacher preparation institutions, and teacher education reform messages prevalent in the area media.

Findings

Independent non-directional t-tests were used to determine whether or not significant mean differences ($\alpha = .05$) existed between the 1985 and 1991 samples of teacher candidates for each of the 10 scores from the seven CTBS tests. These procedures identified significant differences between the two groups of teacher candidates for the language expression test with means of 35.40 and 32.63 for the 1985 and 1991 candidates, respectively ($t = 2.85$, $p = .006$, ES = 0.44) and the language total (combined language mechanics and expression tests) means of 56.82 and 53.07 for the 1985 and 1991 candidates, respectively ($t = 2.42$, $p = .019$, ES = 0.37). Differences between the two groups on one other CTBS score approached statistical significance. The means for the math comprehension scores were 27.94 and 25.67 ($t = 1.87$, $p = .062$, ES = 0.26). Two other CTBS scores revealed p values close to .10: the means for the language mechanics scores were 21.42 and 20.32 ($t = 1.64$, $p = .102$); and the means for the math total (combined math comprehension and concepts/applications tests) were 55.70 and 51.78 ($t = 1.63$, $p = .103$), respectively for the 1985 and 1991 teacher candidates.

Effect sizes (ES) in this paper were computed by dividing the various mean differences by the average standard deviations. Borg and Gall (1989, p. 7) indicate that "Researchers consider effect sizes larger than +.33 to have practical significance, that is, the effect is large enough to make a worthwhile difference in the outcome." Effect size is considered to be the most appropriate indication of the practical significance of the findings of a study. An effect size of 0 means the average subject receiving treatment did no better or no worse than the average subject not receiving the treatment, and an effect size of 1.00 means that the average subject in the treatment group scored at the 84th percentile of the control group distribution.

The complete set of 10 CTBS score means for the 1985 and 1991 teacher candidates are reported in Table 1. A visual inspection of these means suggests that the two groups of candidates performed almost identically on the vocabulary, reading, and spelling tests; however, the 1991 candidates appeared to perform lower on the two language tests and the two math tests. The statistical tests confirm the lack of visual differences between the 1991 and the 1985 candidates' performance on the vocabulary, reading, and spelling tests. Also, the statistical tests confirm the higher performance of the 1985 candidates on the language expression test and on the combined language total score, but the apparent advantage of the 1985 candidates' performance on the language mechanics just approaches statistical significance.

There were seven basic tests, and three combined-total scores, comparisons between the 1980's and the 1990's groups. It can be observed that six of these comparisons (via raw means) favored the 1980's group and only one favored the 1990's group. With the expectation that if no real difference existed between the two groups, there should have been 3.5 instances of where the 1980's group revealed higher means and 3.5 instances for them showing smaller means than their 1990's cohorts. A chi-squared value of 3.57 ($df = 1$, $p = .059$) was computed from these observed and expected values.

Insert Table 1 about here

The multivariate analysis of variance procedures completed on the ACT scores revealed no overall between group mean differences for the 1985 and 1991 teacher candidates (MANOVA $F = 0.79$, $p = .668$). None of the sets of group mean ACT score comparisons revealed either apparent visual differences or statistical differences as can be seen in Table 2.

Insert Table 2 about here

Summary and Discussion

The analyses of the data collected from the 1985 and the 1991 samples of teacher candidates might suggest inconsistent effects of recent educational reform efforts as reflected upon the recruitment of teacher candidates for this large midwestern teacher preparation institution. The increased efforts to recruit candidates with high academic aptitude, as measured by ACT scores, during this six-year period of increased competition for academically able high school graduates had allowed this teacher preparation institution to maintain the same level of ACT mean scores over the two periods. Incidentally, the institution's recruitment effort

during this period had specifically focused on contacting and recruiting high school graduates with high ACT scores. The comparisons of the basic academic skills between the 1985 and the 1991 candidates, however, revealed less positive results. The 1991 candidates had statistically significant lower language expression scores than did the 1985 candidates. None of the other CTBS tests revealed significant differences between the two groups of candidates; however, the math comprehension mean difference approached statistical significance and the combined language total, which includes the language expression test, difference was statistically significant with both favoring the 1985 candidates compared to the 1991 candidates.

Where significant and near significant mean differences existed, the effect sizes (0.26 to 0.44) indicated that the 1980's group was, in a practical sense, probably superior to the 1990's group. In addition, 86% of the mean comparisons favored the 1980's group ($p = .059$) over the 1990's group. It thus seems prudent to conclude that if real differences existed, the 1980's group tended to be superior to the 1990's group on a test of basic academic skills.

Relative to other differences noted between the 1985 and 1991 samples of teacher candidates, the proportional increases in the numbers of elementary compared to secondary majors and a smaller proportion of males compared to female candidates in the 1991 in contrast to the 1985 sample of candidates, suggests that the marketability factors as described by Weaver (1983) may be impacting upon more recent teacher candidate pools. Students with college majors that would make them qualified for secondary teaching positions tend to be more marketable than those students qualified to teach in elementary schools which might account for fewer secondary as compared to elementary majors in the 1991 sample of teacher candidates. This greater marketability of secondary majors might also explain in part the decrease in the proportion of male to female candidates between 1985 and 1991 as more males are typically found in the secondary as compared to the elementary major.

In summary, and to the extent that findings from this single institution may be generalized to other similar institutions, the data from the present study suggests that recent educational reform efforts, including teacher preparation program efforts to recruit high school graduates with high ACT scores, have not improved the teaching profession's previously limited success in competing with other professions for talented candidates. At best, these reform efforts may be allowing teacher education institutions to maintain previously somewhat noncompetitive levels of candidates' ACT scores; whereas, candidates' levels of basic academic skills in some language and math skill areas, as measured by one criterion test, may even be decreasing.

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Table 1

t-Test Comparison Between the 1985 and 1991 Teacher Candidates' Basic Academic Skills Scores

	1985			1991			
Variable	N	M	SD	N	M	SD	t	p
CTBS Scores								
Vocabulary	358	33.96	6.87	45	34.20	6.33	0.22	.825
Reading Comprehension	358	32.94	5.97	45	32.76	6.75	0.20	.844
Reading Total	358	66.91	11.72	45	66.96	11.99	0.03	.978
Spelling	358	23.17	4.46	56	23.14	5.54	0.04	.975
Language Mechanics	358	21.42	4.58	56	20.32	5.09	1.64	.102
Language Expression	358	35.40	5.68	57	32.63	6.97	2.85	.006
Language Total	358	56.82	9.11	56	53.07	11.04	2.42	.019
Math Comprehension	356	27.94	8.52	58	25.67	8.85	1.87	.062
Math Concepts & Applic.	356	27.76	9.01	58	26.10	9.46	1.29	.196
Math Total	356	55.70	16.87	58	51.78	17.38	1.63	.103

Table 2

MANOVA of ACT Scores for 1985 and 1991 Teacher Candidates

	1985 M	1991 M	Univariate F Value*	p
ACT 1 (English)	20.64	20.78	0.27	.923
ACT 2 (Math)	19.55	19.56	0.90	.745
ACT 3 (Social Studies)	19.77	19.86	0.02	.875
ACT 4 (Natural Science)	23.00	22.82	0.11	.741
ACT 5 (Composite)	20.89	20.95	0.08	.777

* The multivariate F (Wilk's lambda) test for no overall year effect among the five dependent (F = 0.79, p = .668).

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